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RESEARCH REPORT

Physiotherapy management of knee osteoarthritis in Nigeria—A survey of self-reported treatment preferences

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KEYWORDS
knee osteoarthritis;
physiotherapists;
treatment preference

Abstract *Background:* knee osteoarthritis (OA) is a prevalent condition. Little is known about whether treatments provided by physiotherapists to patients with knee OA in Nigeria follow recommended clinical practice guidelines.
Objective: The aims of this study were to investigate Nigerian physiotherapists' treatment preferences for knee osteoarthritis (OA) and to evaluate if their preferences were in line with contemporary clinical practice guidelines and recommendations.
Methods: A cross-sectional survey of 267 physiotherapists from various health institutions in Nigeria were surveyed, using a structured questionnaire incorporating a clinical vignette on knee OA.
Results: Based on the clinical vignette, the majority of the respondents (68.2%) recommended review of x-rays as part of the diagnostic process for knee OA. Thermotherapy was the most utilized modality (86.1%), followed by therapeutic exercise (81.3%). Only 11.1% of the physiotherapists used therapeutic exercise alone. Manual therapy in conjunction with other modalities was the choice for 18% of the physiotherapists. Only 49.1% of the physiotherapists reported including advice on weight control and up to 39% reported bed rest as part of the treatment approach.
Conclusion: There was a poor consensus among the physiotherapists in Nigeria on how knee OA is managed compared with contemporary clinical guidelines and recommendations which emphasized application of core modalities, such as therapeutic exercises, patients' education, and weight control over passive modalities. Some areas of practice are in line with contemporary guidelines, while some were in conflict with evidence-based practice.
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Introduction

Osteoarthritis (OA) is a degenerative disorder of synovial joints characterized by focal loss of articular cartilage with reactive changes in the subchondral and marginal bone, synovium, and para-articular structures [1]. According to the National Institute for Health and Care Excellence [2], OA refers to a clinical syndrome of joint pain accompanied by varying degrees of functional limitation and reduced quality of life. It is the most common form of degenerative joint disease, affecting 15% to 40% of people aged 40 and above [3]. The disease is a leading cause of disability and has a slow, progressive course that ends with joint failure and subsequent disability [4,5].

Clinically, knee OA is characterized by pain during weight bearing, tenderness, limitation of knee movement, crepitus, occasional effusion, and variable degrees of local inflammation [6]. Pain is the most frequent reason for patients with knee OA to seek medical attention and rehabilitation [6]. If left untreated, pain and stiffness will result in a loss of physical function and independence. Knee OA is a global problem but unfortunately there is no authoritative data on the prevalence of knee OA in Nigeria as a whole. However, according to findings from a hospital-based study and research findings from two out of the six geopolitical zones in Nigeria, it is evident that knee OA constitutes an important problem among the Nigerian population [7—9].

Management of pain and other associated problems in patients with knee OA is multidisciplinary and it involves application of pharmacological and nonpharmacological modes of therapy [5,10]. According to Hay et al [11] physiotherapy, as a mainstay of conservative treatment for knee OA should provide proven and efficacious therapy that must be shown to adequately address patients' needs above that which is provided by a pharmacologic mode of therapy. Relevant to effective physiotherapy treatment for knee OA are the clinical practice guidelines and systematic review recommendations on the management of knee OA that emphasise the need for appropriate management of the disease. In Nigeria, physiotherapy is a key stakeholder in the health care system. Physiotherapy is readily available at most of the government-owned public health care facilities and private settings across the six geopolitical zones. Consequently, patients with knee OA are in a position to access this service. However, despite the reported prevalence of knee OA in Nigeria and the prominent role played by physiotherapists in its management, there is a dearth of published literature on how physiotherapists in Nigeria, a sub-Saharan African nation, manage this problem. This is despite the abundance of clinical practice guidelines in existence which are developed to facilitate knowledge translation to clinicians in order to promote evidence-based clinical practice [2,12—17]. This study was conceived to investigate the treatment of knee OA by physiotherapists in Nigeria in order to find out if their management approach is consistent with contemporary clinical practice guidelines and recommendations that exist in rheumatology [2,12—17]. We also compared management of knee OA in Nigeria with approaches used in Western countries [2,13—16] such as the UK, Canada, and USA, where there are similar physiotherapy educational programmes and practices.

Materials and methods

Research design

The study was a cross-sectional survey of physiotherapists practicing in private, secondary, and tertiary hospitals across Nigeria.

Participants

Participants for this study were all practicing physiotherapists (458) drawn from medical facilities across Nigeria's six geopolitical zones. To be eligible for recruitment, participants must have practiced as physiotherapists in Nigeria for at least 1 year and must hold a current practice licence of the Medical Rehabilitation Therapists Registration Board of Nigeria. Sample size calculation was not required because the purpose of the study was to capture national practice.

Materials

The questionnaire for the study was adapted from a similar study conducted by Ayanniyi et al [18] among physiotherapists in Nigeria. The questionnaire was originally designed to ascertain attitudes and treatment preferences of physiotherapists for the management of low back pain. The adapted version was modified for use in this study to ascertain the treatment preferences of physiotherapists in the management of knee OA. The questionnaire (Appendix 1) consists of two sections, A and B. Section A consists of questions that probe into the socio-demographic and practice settings of the physiotherapists, such as age, sex, years of practice, practice settings, and patient load. Section B is comprised of a clinical vignette on knee OA, followed by a series of questions probing into the diagnostic process and treatment preferences.

The modified questionnaire was assessed by physiotherapists from the College of Medicine, University of Ibadan and the University College Hospital, Ibadan, Nigeria to ensure its face and content validity. The original version did not include shortwave diathermy, peripheral joint mobilization, and myofascial release as possible choice of treatment techniques and modalities. The question "reason for your choice" was also not included in the original version. The modifications in the questionnaire were carried out based on recommendations of the expert physiotherapists. The questionnaire was pretested for clarity and comprehensibility among 20 physiotherapists across the professional grades, and minor corrections were made to accommodate suggestions made by the intended participants.

Questionnaire administration

The protocol for the study was approved by University of Ibadan and University College Hospital Ethics Committees.

Permission for the distribution of the questionnaires was obtained from the Heads of Department of the participating physiotherapy facilities. The self-administered questionnaires were distributed to the physiotherapists in all the identified facilities through postal and hand deliveries. The purpose of the study was explained to the intended participants through a letter of transmittal attached to each copy of the questionnaire. Anonymity was maintained, as participants were not required to identify themselves. A follow-up was scheduled every 2 weeks by personal visits, telephone contacts, and e-mails, encouraging the participants to complete and return the questionnaires. A maximum of three reminders were scheduled for each centre for the purpose of retrieving the completed questionnaire, after which no contact was made with such defaulting participants.

Data analysis

The study was primarily descriptive. Frequencies and percentages were computed to profile the responses relative to the variables of interest. Means and standard deviations were computed for age of the participants.

Results

Demographic characteristics of the physiotherapists

The results for this study were based on a clinical vignette presenting hypothetical patients suffering from knee OA. Out of the 400 physiotherapists identified for the study only 267 (66.8%) completed and returned the questionnaires over a period of 8 weeks after three reminders. The demographic characteristics of the respondents are as presented in Table 1. The majority of respondents practiced in government-owned public hospitals (95.5%, $n = 255$), while only 4.5% ($n = 12$) practiced in private clinics.

Table 1 Characteristics of the participants.

Variables	*n*	%
Age group (years)		
21–30	93	34.8
31–40	108	40.4
41–50	57	21.3
51–60	8	3.0
> 60	1	0.4
Sex		
Male	165	61.8
Female	102	38.2
Years of practice[a]		
1–5	110	41.7
6–10	69	26.1
11–15	35	13.3
16–20	31	11.7
21–25	11	4.2
26–30	6	2.3
> 30	2	0.8

[a] Data does not total 267 due to missing value.

Patient evaluation prior to treatment

Based on the clinical vignette in the questionnaire, the majority of the respondents (68.2%) ($n = 182$) requested an x-ray as part of the diagnostic process for knee OA, while those who relied solely on clinical/physical examination constituted only 31.8% ($n = 85$).

Physiotherapists' treatment preferences in the management of knee OA

Thermotherapy (heat/cold) was the most utilised modality, incorporated with various treatment approaches by the majority of the physiotherapists for the treatment of the hypothetical patients with knee OA 86.1% ($n = 230$) (Fig. 1). Therapeutic exercise was the second most utilised modality by the majority of the physiotherapists 81.3.0% ($n = 217$). It was mostly used in combination with other modalities including, heat or ice (63.7%), manual therapy (physiotherapist hands-on techniques) (58.4%), electrotherapy (27%), and acupuncture (3.4%). Manual therapy was the choice for 18% of physiotherapists and it was mostly used in combination with thermotherapy, electrotherapy, or acupuncture. A small minority (0.75%) used thermotherapy (heat/ice) alone or electrotherapy (transcutaneous electrical nerve stimulation or shortwave diathermy) in their management of knee OA in conjunction with advice on bed rest. Only 11.1% of the physiotherapists reported they would use therapeutic exercise alone. A total of 49.1% of all the physiotherapists reported advice on weight control and bed rest (39%) as part of treatment approach. All of the physiotherapists (100%) indicated that they would instruct their patients on a home self-management approach to complement their treatment programme in the clinic, verbally and in writing. The assessment of the participants' knowledge about the modalities that were recommended as core modalities by most clinical practice guidelines on the management of knee OA is shown in Table 2.

Reasons for the choice of treatment

Based on the clinical vignette, the participating physiotherapists' reasons for determining their treatment of choice were as follows: availability (8.3%), known skill (32.5%), work load (0%), and evidence from literature (59.2%) respectively.

Treatment visits

The majority of physiotherapists (54.2%, $n = 128$) reported that they would provide up to 10 treatment sessions to manage a patient with knee OA, while others (45.8%, $n = 108$) indicated that they would require more than 10 treatment sessions with average of two treatment visits per week to manage a patient with knee OA.

Discussion

To our knowledge, this is the first descriptive survey on physiotherapy management of patients with knee OA in

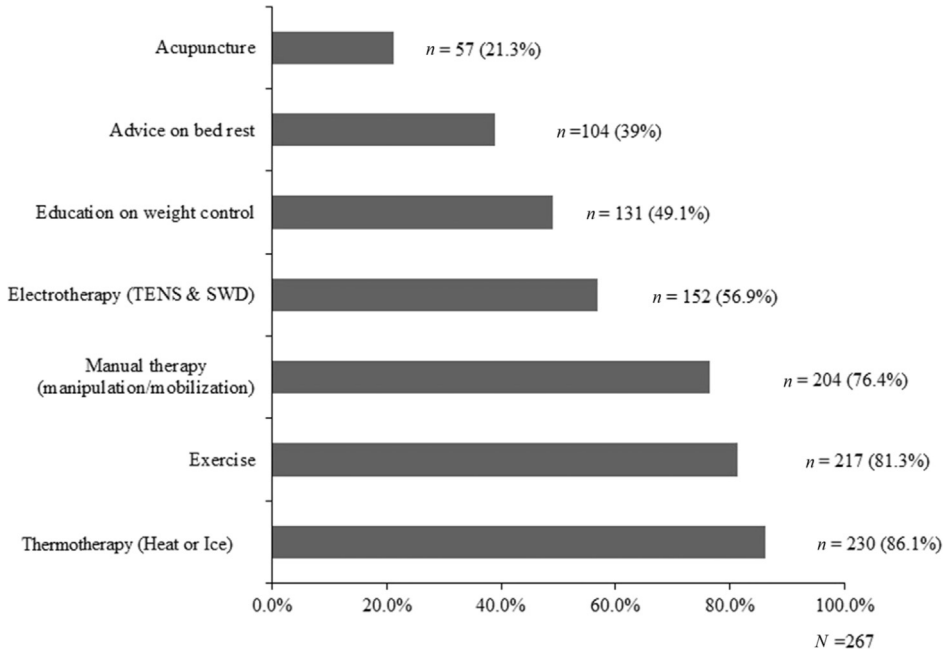

Fig. 1. Treatment approaches used by physiotherapists for knee OA. OA = osteoarthritis; SWD = shortwave diathermy; TENS = transcutaneous electrical nerve stimulation.

Nigeria. It aimed to investigate the treatment preferences of physiotherapists in Nigeria for knee OA. Our findings provide a useful insight into the ways physiotherapists manage knee OA in Nigeria and it enables us to compare whether this practice is consistent with recommendations from clinical practice guidelines. Our findings suggest that there is a disparity in practice between physiotherapists in Nigeria and those of western countries such as the UK, Canada, and USA on the appropriate utilisation of recommended core modalities in the management of knee OA.

Demographic characteristics and practice settings

Physiotherapy seems to be a male-dominated profession in Nigeria. This finding is consistent with previous findings [18,19] which found that practising male physiotherapists were in the majority in Nigeria. A predominance of physiotherapists in the younger age group and with less than 10 years of work experience was also noted in this study, which is consistent with previous findings [19]. Findings from this study indicated that the majority of physiotherapists in Nigeria were employed in government-owned public hospitals, reflecting the fact that the government is the major employer of physiotherapists in Nigeria.

Table 2 Most preferred treatment modalities.

Modalities	*n*	%
TENS	152	56.9
Ice	141	52.8
Education regarding weight control	133	49.8
Heat	126	47.1
Peripheral joint mobilization	103	38.5
Bed rest	103	38.5
Myofascial release	101	37.8
Stretching exercise	93	34.8
Strengthening exercise	80	29.9
Aerobic exercise	72	26.9
Acupuncture	57	21.3
Hydrotherapy	28	10.4
Shortwave diathermy	2	0.7

TENS = Transcutaneous electrical nerve stimulation.

Diagnostic details

There was a high utilisation of x-ray as an assessment tool to make a diagnosis of knee OA among physiotherapists in Nigeria. Although its use is recognised in screening and confirming diagnosis in confusing situations of knee disorders including knee OA [15], our finding suggest that physiotherapists practicing in Nigeria placed more emphasis on the use of x-ray in the diagnostic process, as more than 60% of participants utilized it in diagnosis. This is at variance with their counterparts in the UK, Canada, and USA. This practice is equally at variance with recommendations from most clinical practice guidelines on the management of knee OA [2,12—17].

Physiotherapists' treatment preferences

The planning of treatment for hypothetical patients as presented in this study gave a useful insight into the respondents' knowledge of what constitutes core and adjunct modalities in the treatment of knee OA according to clinical treatment guidelines. The utilization of therapeutic exercises and manual therapy requiring professional skill and with a stronger base of evidence to reduce pain was less favoured than electro/thermal modalities by most Nigerian physiotherapists. This is not consistent with guidelines and

recommendations for managing knee OA [2,16—17]. Findings have shown that therapeutic exercises reduce pain and improve function and health status in patients with knee OA [4,20] and are an essential, core aspect of management for every patient with knee OA.

The management of knee OA with the combination of therapeutic exercise and manual therapy was also reported by a number of respondents. This treatment approach is consistent with recommendations from a number of clinical guidelines [2,13—16] which strongly recommends manual therapy as one of the nonpharmacological therapies for knee OA. However, it is only recommended as a core modality for the management of knee OA in one clinical treatment guideline [12], particularly when knee joint dysfunctions predominate. Nonetheless, there seems to be a consensus that manual therapy should be considered as an adjunct modality in the management of knee OA [2,15]. The use of acupuncture in conjunction with manual therapy or therapeutic exercise is a recognised approach in the management of knee OA [21]. However, the National Institute for Health and Care Excellence [2] update does not support the use of acupuncture for the management of osteoarthritis.

The usefulness of education on weight reduction and control is less appreciated by the majority of the physiotherapists who participated in the present study. However, patient education in weight reduction and control for those who are obese is one of the core treatment approaches recommended in most of the clinical practice guidelines for the management of knee OA [2,12—17]. The level of bed rest and other passive modalities such as heat or cold and transcutaneous electrical nerve stimulation or short-wave diathermy by physiotherapists in this study is not supported by any of the treatment guidelines [2,12—17] and it is at variance with the findings of Zeller et al [22] who found that physical activity, rather than bed rest or passive modalities, is best for managing osteoarthritic knee pain. Conversely, the need for a balance of activities along with rest is recognised in most musculoskeletal disorders. The wide-spread combination of modalities by physiotherapists who took part in this study may suggest that the concept of utilizing a single core modality, such as therapeutic exercise, is not popular among physiotherapists in Nigeria. This finding is consistent with findings by Holden et al [23] among physiotherapists in the UK, which showed that treatment in routine practice often involves several interventions given simultaneously.

Reasons given by the participants for their choice of treatment are representative of what can be expected in clinical settings, with the majority indicating evidence from literature. This is expected in view of popularity given to evidence-based clinical practice by the publications of clinical practice guidelines by many professional bodies with respect to the management of knee OA [2,12—17]. Some respondents, however, attributed their choice of treatment to their possession of certain known skills. This finding is consistent with clinical practice as a whole, where acquisition of skills is recognised as a means of improving clinical competence [23]. The choice of treatment by reason of the availability of certain modalities was less emphasised by respondents in this study, and this should be expected since different clinical conditions have their specified treatment regimen [2]. Provision of instructions on the home management of knee OA as provided by all the respondents are in line with recommendations from the clinical practice guidelines, however, this should be provided not only verbally but by way of written instructions or booklets which are more reliable [2,12—17].

Treatment visits

Our findings indicated that physiotherapy for knee OA is delivered over many treatment sessions. Based on the clinical vignette, the majority of physiotherapists (54.2%) provided up to 10 treatment sessions, while others (45.8%) provided more than 10 treatment sessions. This is consistent with previous findings in Nigeria with respect to physiotherapy management of similar musculoskeletal problems, such as neck and shoulder pain [24,25]. Findings from other studies clearly demonstrate that there is no consensus with respect to the number of treatment visits or duration of treatment for knee OA. According to Holden et al [23], physical therapy for knee OA in the UK is delivered over relatively few treatment sessions, with the majority of the physical therapists providing up to five treatment sessions, and most NHS physiotherapists providing only two or three sessions. Conversely, randomized trials that support exercise for knee OA have included six to 12 treatment sessions [26,27] or even more treatment sessions [28]. Similarly, most of the existing clinical practice guidelines have no recommendations for the number of treatment visits for knee OA; however, French guidelines [12] for lower limb OA promote supervised physical therapy-led exercises for at least eight sessions, followed by a patient-administered home program. It is to be noted that apart from clinician-determined duration of treatment, funding the patient care could also constitute a problem in exploring the available care in a developing country like Nigeria. With respect to health care funding, Nigerian government does not yet operate a full universal healthcare coverage. Conversely, out-of-pocket payment by patients is predominant, while the National Health Insurance Scheme that is in operation is predominantly targeted at the Nigerian population employed in the formal sector of the economy [29]. Therefore, the healthcare funding arrangement in place may also be an important factor in determining length of treatment session for the patients with knee OA. However, there is consensus among all clinical practice guidelines that treatment of individuals with knee OA transcends attendance at clinic only but rather a lifelong care with emphases being placed on patients' education and self-management in order to achieve the maximum benefits derivable from treatment.

Limitations

This study had a number of limitations. One important limitation of our study is that the respondents were not asked if they were familiar with any of the existing clinical practice guidelines for the management of knee OA or whether their choice of treatment was influenced by any of the existing clinical practice guidelines for knee OA. Most of these guidelines are accessible and are within the public domain. It is to be noted that within the field of rheumatology, a number of clinical practice guidelines are in existence

[2,12—17] and most of these guidelines are continually been reviewed and updated in the light of new findings emerging from researches on the effectiveness of various modalities and approaches to the management of knee OA. The evaluation of the clinical practice of physiotherapists in this study with respect to their preferred method of managing knee OA was self-reported clinical behaviour on the basis of a vignette. However, only limited information with respect to patient condition can be provided while treatment options are also limited. It is therefore possible that, in clinical practice, physiotherapists give different treatment because of additional information that patients may provide with respect to their condition.

Manual therapy was not specifically defined in the research questionnaire. It is however, assumed to mean any hands-on techniques performed on patients, such as: joint mobilisation/manipulation, myofascial release, soft tissue massage, and stretching. This study was extended to practising physiotherapists in Nigeria and no importance was placed on the respondents' area of specialisation because most physiotherapists in Nigeria function in a capacity of a "general practitioner", with opportunities to manage different conditions. Clinical setting with respect to outpatient or in-patient was not also considered to be important in this study because the focus of our study was to verify whether management of knee OA is in conformity with clinical treatment guidelines and recommendations. Noninclusion of participation in relevant continuing education should also be regarded as a limitation of this study, particularly because about 30% of the participants indicated that their choice of treatment for patients with knee OA was informed by their known skill, the source of which was not verified.

It should be noted that about one-third of the practicing physiotherapists did not respond to the survey. This could have significant implications for the results as feedback from this tranche of the target population could potentially tilt the observations that have been made. Conversely, if this tranche of the target population were made up of those segments of practicing physiotherapists not involved in the management of knee OA, the result could be regarded as a true reflection of management of knee OA among the physiotherapists in Nigeria. This fact should therefore be borne in mind when interpreting these results.

Further/future research focus

A number of researches, both clinical and educational, can be elicited from this work. It is useful to know the perceptions of both patients and physiotherapists about treatment interventions, duration of treatment, effectiveness of care, and patient satisfaction with care received. It would be useful to know the main influences affecting current practice, so that appropriate corrective steps can be taken, which may have implications for the continued professional development and undergraduate training of physiotherapists in Nigeria.

Clinical implications of findings

It can be inferred from this study that persons with knee OA may not be able to consistently access care that is in total compliance with contemporary clinical treatment guidelines recommendations because of poor consensus among the physiotherapists in Nigeria on the management of knee OA. Current clinical practice as captured in this study favoured application of multiple interventions, which is at variance with contemporary clinical treatment guidelines. Such practice (application of multiple interventions) may have the potential to contribute to the escalating cost of care, with no corresponding benefits to the patients. It also has implications for physiotherapy practice and professional educational development in Nigeria.

Conclusions and recommendations

The current survey has provided an overview of physiotherapy management of knee OA in Nigeria. Findings have shown some areas of "good practice" in line with contemporary guidelines, however, there was a poor consensus among the physiotherapists in Nigeria on how knee OA is managed. It also highlighted potential areas of concern regarding evidence-based practice; namely, excessive utilisation of x-ray in the diagnosis of knee OA and very common use of passive electrotherapy modalities and bed rest in managing pain in knee OA. This survey has highlighted some differences in practice compared to developed countries such as Australia, the UK, Canada, and USA where clinical practice guidelines were in existence to guide practice. Physiotherapy policy makers should consider the possibility of developing a clinical practice guideline for managing knee OA in Nigeria.

Authorship contribution

Conception and design of study: O. Ayanniyi, R.F. Egwu, A.F. Adeniyi.

Data acquisition: O. Ayanniyi, R.F. Egwu.

Data analysis and/or interpretation: O. Ayanniyi, R.F. Egwu, A.F. Adeniyi.

Drafting the manuscript: O. Ayanniyi, R.F. Egwu.

Revising the manuscript critically for important intellectual content: O. Ayanniyi, A.F. Adeniyi.

Approval of the version of the manuscript to be published: O. Ayanniyi, R.F. Egwu, A.F. Adeniyi.

Conflicts of interest

The authors report no conflicts of interest.

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Appendix 1

Questionnaire

TREATMENT PREFERENCES FOR MANAGEMENT OF KNEE OSTEOARTHRITIS AMONG PHYSIOTHERAPISTS IN NIGERIA

SECTION A

1. Age: 21- 30( ) 31-40( ) 41-50( ) 51-60( ) above 60( )

2. Sex: male ( ) female ( )

3. Years of practice as a physiotherapists _____ year

4. In which hospital set-up do you practice? (Check one)
   (i) Tertiary/ Teaching hospital (ii) Secondary/ Federal medical centre
   (iii) General/ specialist hospital (iv) Private/primary health centre

5. In which setting do you normally see osteoarthritic knee pain patients? (Circle all that apply)
   (ii) Hospital in-patient (iii) Hospital outpatient (iv) Itinerant

6. In a typical week, about how many patients do you see generally? _____

SECTION B

PLEASE INDICATE YOUR MOST LIKELY RESPONSE TO THIS CASE

7. An overweight 68 year old woman comes to you complaining of waking up with very painful, swollen and stiff knees. She had been having similar complain for the past 5 years, on visiting her physician she was diagnosed with osteoarthritis of the knee. The pain started with the right knee and later the left knee. There was no history of trauma. Pain is always worse on the right. Several analgesics had been prescribed for her by her physician without long term relief.

a. During the first visit with this patient what evaluation would you use? (Check all that apply)
   (i) _____ Palpation (ii)_____ posture
   (iii)_____ ROM (iv)_____deformity
   (v) _____ X-ray (vi)_____ Functional activity
   (vii) _____muscle strength
   (viii) Others specify _____

b. (i) During the first visit with this patient what single therapy would you recommend / provide as a Core treatment- (A), as an Adjunct treatment – (B) ?
   (1)_____ Bed rest for _ _ _ days (2)_____aerobic exercise
   (3)_____heat / excluding ultrasound
   (4)_____ stretching exercise (5)_____ Ice
   (6)____strengthening exercise (7)_____TENS
   (8)_____myofascial release
   (9)_____Acupuncture_____(10) Peripheral joint mobilization
   (11)_____ Short wave diathermy (12)_____ education regarding Weight control.
   (13)_____ Hydrotherapy (14)_____ other (specify)

(ii) During the first visit with this patient what combination of therapies would you recommend / provide as a CORE treatment – A and Adjunct – B in addition to the core treatment?

(1)_____ Bed rest for _ _ _ days (2)_____aerobic exercise

(3)_____heat / excluding ultrasound

(4)_____ stretching exercise (5)_____ Ice

(6)____strengthening exercise (7)_____TENS

(8)_____myofascial release

(9)_____Acupuncture_____(10) Peripheral joint mobilization

(11)_____ Short wave diathermy (12)_____ education regarding Weight control.

(13)_____ Hydrotherapy (14)_____ other (specify)

c. Reason (s) for your choice

(i) Availability (ii) Known skill (iii) Workload (iv) Evidence from literature

d. At the end of the visit which would you ask the patient to do?

(Check one)

_____ Check back by phone only if pain persisted

_____check back by phone, even if pain diminished.

_____schedule a follow-up visit only if patient thought it Necessary

_____ schedule a follow-up visit before leaving the clinic

_____other (specify)

e. How many treatment visits would you schedule for this patient?

_____5 to 7 but less than 10 visits

_____10 visits or more.

f. What is the frequency of clinic visits?

_____Once a week

_____Two times a week

_____Three times a week

Others_____ times a week

g. Would you provide any instruction on home self-management?

_____Yes/No

(i) Verbal_____

(ii) Written_____

(iii) Others_____

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